

---

## The organisational learning culture and organisational performance in Macedonian companies

---

Miha Škerlavaj\* and Vlado Dimovski

Faculty of Economics,  
University of Ljubljana,  
Kardeljeva ploščad 17,  
SI-1000 Ljubljana, Slovenia  
Email: miha.skerlavaj@ef.uni-lj.si  
Email: vlado.dimovski@ef.uni-lj.si  
\*Corresponding author

Matej Černe

The Centre of Excellence for Biosensors, Instrumentation and Process  
Control – COBIK,  
Velika pot 22, SI-5250 Solkan, Slovenia  
Email: matej.cerne@cobik.si

Ljubomir Kekenovski, Dragan Tevdovski  
and Marija Trpkova

Faculty of Economics,  
University 'Ss. Cyril and Methodius',  
Krstev Misirkov bb, Skopje, Macedonia  
Email: keken@eccf.ukim.edu.mk  
Email: dragan@eccf.ukim.edu.mk  
Email: marijat@eccf.ukim.edu.mk

**Abstract:** The purpose of the paper is to construct, present and test a model that describes the effect of organisational learning culture on organisational performance improvement. To this end, we use data of 202 Macedonian companies and empirically test the model via structural equation modelling. We found that organisational learning culture has a direct and relatively strong impact on non-financial performance from the employee, customer and supplier perspective. A direct but relatively smaller effect can be noticed on the financial performance. Managers need to be aware that such norms and values that ascribe high importance to information acquisition, distribution and interpretation need to be developed in order to achieve higher levels of organisational performance. The paper contributes to the generalisation of a research model previously tested in more-developed economies based on the data gathered in Macedonia, a developing country in transition.

**Keywords:** organisational learning culture; competing values framework; organisational performance; structural equation modelling.

**Reference** to this paper should be made as follows: Škerlavaj, M., Dimovski, V., Černe, M., Kekenovski, L., Tevdovski, D. and Trpkova, M. (2011) 'The organisational learning culture and organisational performance in Macedonian companies', *European J. International Management*, Vol. 5, No. 6, pp.574–607.

**Biographical notes:** Miha Škerlavaj is Assistant Professor of Management and Organisation at the University of Ljubljana, Slovenia, and Head of the Quality Assurance and Learning Center, as well as Associate Professor at BI Norwegian Business School. His research interests include organisational learning, innovations, social network analysis, organisational culture and knowledge management. He is actively involved with international academic associations (Academy of Management, EURAM and INSNA) and regularly acts as reviewer, editor and conference track chair.

Vlado Dimovski is Professor of Management and Organisational Theory at the Faculty of Economics, University of Ljubljana, in Slovenia. He holds a BA in Economics and a BA in Philosophy, an MA in Economics, and a PhD in Management and Finance. His academic research interests cover learning organisation, competitiveness, corporate strategy, developing knowledge-based organisations and labour markets. Besides his university position, he was the State Secretary for Industry (1995–1997), the President of Center for International Competitiveness (1997–2000) and the Minister for Labour, Family, and Social Affairs (2000–2004).

Matej Černe, MBS, is Assistant for scientific research at the Centre of Excellence for Biosensors, Instrumentation and Process Control (COBIK), Slovenia. He is also an undergraduate teaching assistant (course assistant) in the field of management at the Faculty of Economics, University of Ljubljana, Slovenia. He has completed his master's thesis: *An Authentic Leadership Model: An Empirical Test*. His research interests include innovations, leadership, human resource management and organisational culture.

Ljubomir Kekenovski is Dean and Professor of Public Sector Economics at the Faculty of Economics, University 'Ss. Cyril and Methodius', Macedonia. He has published numerous scientific papers and university books and has coordinated many research projects, out of which the most prominent are 'Discovering and Measuring Transaction Costs – A Comparative Analysis of the Case of the Republic of Macedonia with Other Countries in Transition and the United States of America' – with MIT/Harvard University (2008); and 'Transformation of the Public Sector in the Republic of Macedonia with Compliance to the European Legislative – With a Special Overview on Energy and Gas' (2005).

Dragan Tevdovski is a teaching and research assistant for Statistics at the Faculty of Economics, University 'Ss. Cyril and Methodius', Macedonia. He holds an MA in Statistics and a PhD in Economics. He is co-author of two editions of the university textbook *Statistics for Business and Economics*, and part of the team of authors of the scientific monographs *Nobel Prize Winners in Economics 1969–2008* and *Labor Market Characteristics in Selected Economies*. He has published 19 scientific papers in four languages: Macedonian, English, Serbian and Albanian. His research interests include econometrics, labour markets and macroeconomic policies.

Marija Trpkova is a teaching and research assistant for a group of subjects in Statistics at the Faculty of Economics, University 'Ss. Cyril and Methodius', Macedonia. She has a BA in Economics and she is enrolled in the postgraduate studies at the Faculty of Economics, University in Belgrade, in the Department

of Statistical Analysis. At present, she is working on her master's thesis: *Classification Procedures in Multivariate Statistical Analysis*. She is the author of eight scientific papers and has participated in several scientific conferences and seminars. Her research interests include applied statistics, multivariate statistical analysis, time-series analysis and demographics.

---

## 1 Introduction

In today's unstable economic environment, organisations are continually under competitive pressures which force them to reinvent the behaviour of their members and improve their learning capabilities in order to achieve better results. Many problems regarding fostering desirable behavioural and cognitive changes arise from inappropriate organisational culture. The paper examines the importance of organisational learning and connects this field with organisational culture, a context often neglected when examining the link between organisational learning (or knowledge management) and organisational performance.

The principal idea of this paper is to focus on the organisational learning culture construct and prove that it is of essential significance when trying to advance organisational performance. 'Organisational culture' is proposed and defined as a set of norms and values about the functioning of an organisation. It is a combination of different culture types within the competing values framework (CVF) (Denison and Spreitzer, 1991; McDermott and Stock, 1999). The objective of this paper is to present and test a model for organisational performance improvement, while the main concentration is on the effect of organisational learning culture on the performance of an organisation.

There are more than a few studies that examine the link between organisational learning culture and organisational performance in the more-developed countries (Bontis et al., 2002; Prieto and Revilla, 2006; Škerlavaj et al., 2007; Uhlaner et al., 2007; Lee et al., 2008; Lu and Li, 2008; Hung et al., 2010). This paper is relevant because it adds to the generalisability of research findings and because it studies the links between constructs, previously confirmed in literature, in different contexts. Not many studies have been carried out in transition economies, which is why we find it interesting to study the impact of organisational learning culture on organisational performance in Macedonian companies. Our data may be even more valuable because of the difficulty in gathering them and the limited statistical database information in such transition countries.

The Macedonian economy is small. The gross domestic product (GDP) was equal to 6.5 billion euros in 2008, with about 30% of the EU27 average GDP per capita. It is an open economy, highly integrated into international trade, with a total trade-to-GDP ratio of 106.8% at the end of 2008. Agriculture and industry have been the two most important sectors of the economy in the past, but the service sector has gained prominence in recent years. The central economic problems are a high unemployment rate, which is constantly higher than 30%, a grey market share estimation of around 20% and modest economic growth rate. The average yearly growth rate of the Macedonian economy in the last 19 years is slightly above 1%.

The transition process of the Macedonian economy has dramatically increased the unemployment rate (from 26.27% in 1991 to 39.1% in 1995 – the highest rate ever). The vast majority of enterprises were privatised according to the management buyout model. The privatisation process was significantly affected by a series of factors: the disintegration of former Yugoslavia (1990–1992), the imposition of sanctions against the former republics of Yugoslavia (from spring 1992 to autumn 1995) and the Greek embargo (February 1994–September 1995). The first modest GDP increase was registered in 1996. In the following years, the Macedonian economy took an upward course. The positive trend, however, was curtailed in 2001 because of the military crisis in Macedonia, when a civil war was fought between the government and ethnic Albanian insurgents. After the war, the yearly economic growth was slow but steady at about 3%.

The firms in the Republic of Macedonia are highly centralised, and decision-making is carried out by top management only. The autocratic style of leadership is predominant. Authority and power derive mostly from the position of managers within the hierarchy. Such a leadership and management process is presumably not ideal for the development of the organisational learning culture. An autocratic, authoritarian arrangement should hinder the process of organisational learning, as employees are inclined to follow orders and not share information, unless this is directly asked of them.

The board of directors does not play the same role as it does in developed economies. Therefore, the role of its chairman is mostly formal, unless the chairman of the board is also the general manager. The internal promotion of managers is a common practice. Managers are oriented more towards personal relationships, which is a result of the previous system of self-management and the model of privatisation that have both been implemented with employee participation.

The framework of the paper is the following: Section 2 reconsiders the related literature in order to display our specific contributions. Section 3 develops the research hypotheses and conceptualises the research model. Section 4 portrays a methodological framework for the study. Section 5 provides results of the data analysis. In Section 6, we present the discussion from a theoretical and practical point of view as well as conclusions with the review of key findings. We finally conclude with Section 7, which also provides guidelines for future research.

## **2 Literature review**

### *2.1 Organisational culture*

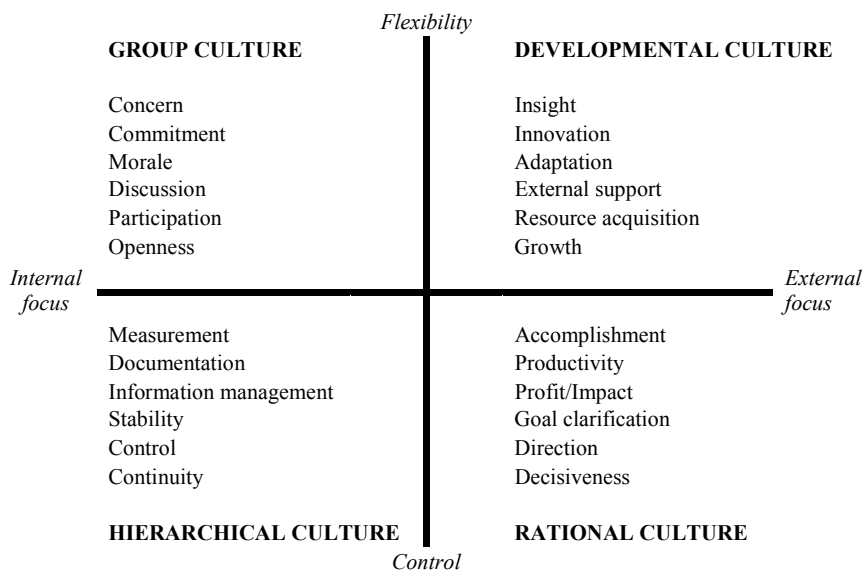
Edgar Schein, who is probably most closely associated with the study of organisational culture, defines it as ‘a pattern of basic assumptions – invented, discovered or developed by a given group as it learns to cope with its problems of external adaptation and internal integration – that has worked well enough to be considered valuable and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems’ (1985, p.9).

Perceptions of cultures in organisations will vary, and the patterns of configurations of these interpretations, and the ways they are enacted, constitute culture (Martin, 1992, p.3). Although there are a number of problems and disagreements associated with the

conceptualisation of organisational culture, most definitions recognise the importance of shared norms and values (Wiener, 1988), a system of shared meaning (Becker, 1982, pp.513–527) that guides organisational participant's behaviour (Hatch, 1993). When people join an organization, they need to learn how the particular enterprise does things (Wolf Morrison, 1993; Ledford et al., 1995).

By forming a CVF, we can perform a classification of different types of organisational culture in two dimensions (Denison and Spreitzer, 1991). As presented in Figure 1, the first dimension is flexibility versus control orientation. The second dimension represents different views of activities: those that take place within the organisation and those that happen outside the organisation. When we combine these two dimensions, four types of organisational culture can be identified: group, developmental, hierarchical and rational.

**Figure 1** The competing values framework (Denison and Spreitzer, 1991; McDermott and Stock, 1999)



An important assumption of a CVF is that every type of these cultures is considered an ideal type. Most organisations are a hybrid of these cultural profiles; they do not fit neatly into any of them. The culture in an organisation is a combination of different culture orientations, where usually one culture type is dominant.

## 2.2 Organisational learning

Learning is a relatively permanent change in knowledge or behaviour that results from practice to experience (Hamner, 1974). There are several key points in this definition. First, learning comes from change. Second, a change in knowledge or behaviour has to be relatively permanent or long lasting. The third key aspect of the definition is that learning takes place as a result of practice or through the experience of watching others.

In organisations, it is not only important that individuals learn to perform behaviours that contribute to organisational effectiveness, but also that the organisation as a whole adopts a learning mentality. Organisational learning is a complex, time-honoured process that refers to the development of new knowledge and has the potential to change behaviour (Huber, 1991; Slater and Narver, 1995; Murray and Donegan, 2003). Firms that develop a strong learning culture are good at creating, acquiring and transferring knowledge, as well as at modifying behaviour to reflect new knowledge and insight (Huber, 1991; Garvin, 1993). They are also more adept at creating intangible knowledge, which is likely to be harder for competitors to access and copy. Consequently, it provides greater potential for developing competitive advantages (Nonaka and Takeuchi, 1995). Organisational learning, therefore, positively influences better business performance (Pérez López et al., 2004).

Organisational learning is a continuous testing of experience and its transformation into knowledge available to the whole organisation, and also has to be relevant to its mission (Senge, 1990, p.6). Huber (1991) conceptualised organisational learning as a combination of four processes: information acquisition, information distribution, information interpretation and organisational memory. Organisational learning is especially important for organisations in environments that are rapidly changing (Prokesch, 1997, p.148).

Jones emphasises the importance of organisational learning for organisational performance and defines it as a process through which managers try to increase organisational members' capabilities in order to better understand and manage the organisation and its environment (2000, p.472). There are other studies linking organisational learning to organisational performance as well (Škerlavaj and Dimovski, 2006a; Škerlavaj et al., 2007; Hernaus et al., 2008). Bapuji and Crossan (2004) reviewed the scientific field of organisational learning and concluded that numerous empirical studies have found that organisational learning impacts the performance of the firm and/or moderates the effect of other variables on firm performance in a number of ways.

The model of Dimovski (1994) merged informational, interpretational, strategic and behavioural approaches to organisational learning and defined it as a process of information acquisition, information interpretation and resulting behavioural and cognitive changes. Similarly, Hung et al. (2010) recognise a systems learning and strategic perspective and conceptualise organisational learning as a process of how organisational learning occurs related to organisational change. The change in the way employees think and act should, in turn, have an impact on organisational performance.

### *2.3 Organisational learning culture*

Organisational learning culture places a high value on the process of learning by setting mechanisms in place for suggestions, teams, empowerment and, most subtly but important, empathy to become successful and gain a competitive advantage. Organisation learning culture can be defined as a set of norms and values about the functioning of an organisation (Schein, 1985) that support systematic, in-depth approaches aimed at achieving higher-level, i.e., double-loop (Argyris and Schon, 1996), deuteron (Schon, 1975), strategic (Bhattacharya, 1985) or generative (Wittrock, 1974; Wittrock, 1990; Wittrock, 1992) organisational learning through phases of information acquisition,

information interpretation and accompanying behavioural and cognitive changes (Huber, 1991; Garvin 1993; DiBella et al., 1996). Such organisations find learning as absolutely critical for their business success (Wang et al., 2008).

In this study, we include an additional phase of the organisational learning process in our research model – information distribution, as a second phase that follows after information acquisition. We included this construct to add to the conceptualisation of Dimovski (1994) and to the work of Škerlavaj et al. (2007), where organisational learning was measured without this element. The information gathered through various sources needs to be distributed to those members of an organisation who might require it (Huber, 1991). We form the construct, define the hypothesis and test it in order to learn about the influence of the information distribution construct on behavioural and cognitive changes.

The organisational learning process consists of four phases. It starts with information acquisition – for companies that have strong learning culture, it is very important to acquire operational, technical and strategic information. The second phase is information distribution, where the acquired information is distributed accordingly, by people or by systems, in the organisation. These form two different channels for information distribution. The third phase is information interpretation, where the acquired and distributed information is transformed into meaningful statements. Companies that place importance on this phase have a tendency to value face-to-face, formal and electronic channels. Finally, the fourth phase is employees' behavioural and cognitive changes. They start to think and act in accordance with information acquired, distributed and interpreted.

There are several studies portraying the importance of organisational learning culture by linking this construct to organisational performance improvement (Bontis et al., 2002; Prieto and Revilla, 2006; Škerlavaj et al., 2007; Uhlaner et al., 2007; Lee et al., 2008; Lu and Li, 2008; Hung et al., 2010). All the studies were conducted in the context of developed or high-income countries.

Bontis et al. (2002) found that the establishment of an organisational learning system through correct aligning of stocks and flows of learning at all levels is positively associated with business performance. Prieto and Revilla (2006) showed that learning capability embodied in the organisational culture has a positive effect on business performance. Lu and Li (2008) established that the organisational performance of Chinese companies has been improved significantly with the development of organisational learning culture. Škerlavaj et al. (2007) conducted such a study on a sample of Slovenian companies and found organisational learning culture to be the missing link between business process change and organisational performance, as it has a positive effect on the latter.

Hung et al. (2010) stress that by improving individual, team and organisational learning, organisational learning culture can indirectly improve organisational performance. Their research targeted Taiwanese hi-tech companies. Another study set in Taiwan was that of Lee et al. (2008). They demonstrated the positive effect of both organisational culture and organisational learning on innovativeness as an important indicator and facilitator of business performance. The study of Uhlaner et al. (2007) resulted in a similar discovery, but it also confirmed the positive effect of organisational learning culture through the mediating effect of innovativeness on organisational performance.

The objective of this work is to show that organisational learning culture can contribute to organisational performance and upgrade previous knowledge from several perspectives. We start with a sample consisting of medium- and large-sized companies. We hope to expand the concept of organisational learning culture from the competency perspective alone to a concept that includes the process component (including the information distribution phase, which is embodied in the organisational learning culture research for the first time) and also incorporates the linking of learning opportunities with organisational activities. Furthermore, we put the study in the context of a transitional, developing country for the first time, as such a research was previously conducted in developed or high-income countries only (e.g. Canada, Taiwan, China, Spain and Slovenia).

#### *2.4 Organisational performance*

Pérez López et al. (2004) suggest financial profitability, sales growth, profit growth and profit margin over sales as measures for the financial aspect of organisational performance. Besides financial performance, non-financial performance must also be assessed in order to evaluate the overall organisational performance. There are two main reasons for this requirement. First, in business, there are several interest groups involved and they all have their own particular goals and expectations related to the company. They will only remain in the coalition if their goals will be satisfied in a sufficient manner. Second, strategic business areas are not necessarily financial in nature (Škerlavaj and Dimovski, 2006b).

The importance and power of various stakeholder groups is increasing in a modern business setting. Taking the stakeholders into account is the main idea of Freeman's stakeholder theory (Freeman, 1984; Freeman, 1994). This theory posits the idea that the corporation has responsibility not only towards stockholders, but also towards other groups with a 'stake' in the company, such as shareholders, employees, customers, suppliers, government and society.

Many researchers have revealed the idea that having improved the relationship with stakeholders, including employees, customers and suppliers, will lead to increased shareholder wealth. Berman has found that positive relations between key stakeholders of the company, such as employees and customers, can improve a company's financial performance (Berman et al., 1999). Even the behavioural theory of a company (Cyert and March, 1963) acknowledges that a company is a coalition of individuals or groups of individuals, such as management, employees, customers, owners, government, etc.

Since the stakeholders are very important for an organisation, they should be taken into account when performing the evaluation of organisational performance, over and above the financial indicators of the company. Several different approaches can be used (Tangem, 2004) for organisational performance measurement that includes different stakeholders perspectives. The balanced scorecard (BSC) (Kaplan and Norton, 1992; Kaplan and Norton, 1993; Kaplan and Norton, 1996) is the most established and most commonly used (Neely, 2005), but by far not the only one.

Another framework for organisational performance measuring in the knowledge management and organisational learning research is the one from Zack et al. (2009). They measure the construct with three value disciplines, as proposed by Treacy and



Wiersema (1995). These are customer intimacy, operational excellence and product leadership. Darroch (2005), on the other hand, sees innovation as the most crucial organisational performance measure in today's changing environment.

Measuring organisational performance in less-developed and transitional countries, such as Macedonia, is somewhat specific. Statistical database information about more explicit data, such as the information about companies' financial performance, is nearly impossible to obtain. Even the information that exists and is available is not reliable due to the lack of the meta-data or the descriptions about reporting requirements, ownership structures and accounting practices. These different definitions pose great problems internationally in acquiring and comparing sources of performance data, other than self-assessed data gathered (Deshpandé and Farley, 2004).

The use of perceptual, self-assessed, quasi-objective and subjective measures, though facing challenges from psychological biases (Richard et al., 2009), is common in situations where objective data are either not available or difficult to obtain (e.g. Peng and Luo, 2000; Tang and Peng 2003; Acquaaah and Eshun, 2010). Furthermore, Wall et al. (2004) demonstrated the validity of using such measures as substitutes for objective measures.

### **3 Research hypotheses and model**

In this study, we are considering the impact of organisational culture on different aspects of organisational performance and the relationship between the organisational learning process and organisational performance. We will try to fuse these two aspects in order to finally evaluate the impact of organisational learning culture on the performance of an organisation. Egan et al. (2004) found that organisational learning culture impacts employees' job satisfaction and lowers turnover intentions. Škerlavaj et al. (2007) confirmed the connection between organisational learning culture and organisational performance through business and process change, which are stimulated by the learning culture. We start from the basic research question regarding the influence of organisational learning culture on company performance and develop hypotheses accordingly.

In order for learning to happen, the information that is acquired and understood needs to be transformed into action or cause change in the behaviour (Huber, 1991; Garvin, 1993; Slater and Narver, 1995; Murray and Donegan, 2003). Information is a basis for learning, so the first phase of the organisational learning process is information acquisition (Infoacq). In the next phase, the information acquired needs to be distributed (Infodist) to the appropriate people who can use it. For information to be useful, it needs to be transformed into meaning through information interpretation (Infoint). For this to take place, companies use face-to-face and electronic channels, be it formally institutionalised or informal.

To complete the learning process, it is most essential that information acquired, distributed to the appropriate people and interpreted effectively is transformed into action. Behavioural and cognitive changes (Bcc) in the functioning of an organisation's members are needed for learning to be effective (Huber 1991; Garvin 1993). We come to

the conclusion that all four phases of the organisational learning process must be assigned with a high level of importance if we want to claim that an organisation has a strong learning culture. Starting from this point, we set the first hypotheses:

*H<sub>1</sub>: Ascribing greater importance to the acquisition of operational, tactical and strategic information (Infoacq) leads to the better distribution of information (Infodist).*

*H<sub>2</sub>: Ascribing greater importance to the distribution of information by people or systems (Infodist) leads to the better interpretation of information (Infoint).*

*H<sub>3</sub>: Ascribing greater importance to formal, face-to-face and electronic channels of interpreting information (Infoint) leads to more action in terms of behavioural and cognitive changes (Bcc).*

Consequently, we set the hypotheses that should relate organisational learning culture to organisational performance. Here, we consider the characteristics of the strong learning culture towards employees, customers and suppliers, bearing in mind the stakeholder theory (Freeman, 1984; Freeman, 1994). If there is a strong learning culture in the company, employees will feel that their managers share necessary information, and that they have the power to adapt to internal and external changes in business environments. These employees are more productive, committed and trustworthy, and are prepared to go that extra mile for the company (Jones, 2000). The performance from the employee perspective (Emp) will improve.

A strong learning culture in the company will reflect on the customers (Cust) as well. These organisations are dealing better with their customers, attaining the old and profitable ones and attracting new clients. The reputation of the company is improved. Finally, a strong learning culture also means improved relations with suppliers (Sup). If the process of organisational learning is successfully completed in the organisation, the employees will have no problems in building and maintaining improved relationships with suppliers. Employees will be aware of the importance of such connections and will be encouraged to foster them. Moreover, a learning culture could be developed with the suppliers' organisations. The hypotheses are as follows:

*H<sub>4</sub>: Improved Bcc will have a positive impact on performance from an employee perspective (Emp).*

*H<sub>5</sub>: Improved Bcc will have a positive impact on performance from a customer perspective (Cust).*

*H<sub>6</sub>: Improved Bcc will have a positive impact on performance from a supplier perspective (Sup).*

The next hypotheses relate organisational learning culture directly to financial performance (Fp). Positive changes in the way people act (behavioural changes) and perceive their internal and external environments (cognitive changes) are expected to have a positive impact on the financial performance of the company, which will be indirectly affected by the strong learning culture. A productive, motivated and committed employee who works with lower costs and is loyal to the company will lead to higher profit for the firm (Berman et al., 1999). Better performance from an employee perspective will result in the better financial performance of a company. Improved

relationships with customers will also implicitly have an effect on organisational financial performance. If a company works with its customers and is taking into account their wishes, needs and suggestions, its customers are more likely to buy its products or use its services. This will lead to better financial performance.

There are more than a few studies that examine the link between organisational learning culture and organisational performance in more-developed countries (Bontis et al., 2002; Škerlavaj et al., 2007; Uhlaner et al., 2007; Lee et al., 2008; Lu and Li, 2008; Hung et al., 2010). Hung et al. (2010) note that earlier empirical studies examined not just the indirect but also the direct link between organisational culture and company performance. Bontis et al. (2002) established a direct link between an organisational learning system and business performance. For this reason, the present study also investigates the direct effect of organisational learning culture on organisational performance.

Hung et al. (2010) suggest that by improving individual, team and organisational learning, organisational learning culture can improve organisational performance. This effect is not direct, but rather indirect (Hung et al., 2010), which reflects in our hypotheses as well. The effect of organisational learning culture on improved financial performance will be noted only if the enhanced learning capabilities are used in business processes and are translated into outcomes (Ray et al., 2003). Behavioural and cognitive changes of the companies' employees must therefore be present for employees to perform better, which will influence the financial performance.

*H<sub>7</sub>: Improved Bcc lead to improved financial performance (Fp) in terms of increased return on assets and value per employee.*

*H<sub>8</sub>: A higher performance from the Emp is conducive to improved Fp.*

*H<sub>9</sub>: A higher performance from the Cust improves Fp.*

The final element, the indirect impact of the better relationships with suppliers on the financial effects of the company is rather ambiguous. On one hand, stable relationships with the main suppliers mean stability. On the other hand, pressure on the suppliers and the ability to change them might lead to short-term savings in costs. Nevertheless, we are testing the positive impact on all three forms of non-financial performance of Fp.

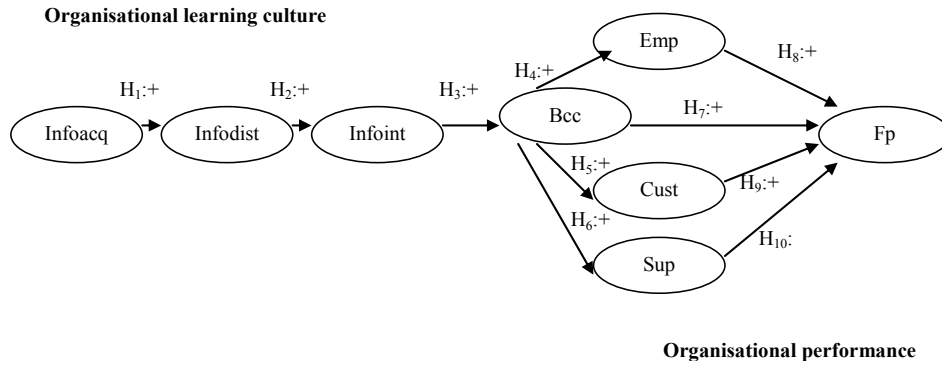
*H<sub>10</sub>: A higher performance from the Sup leads to a better Fp.*

The conceptualised research model is presented in Figure 2 where all main constructs are shown with the hypothesised relationships among them.

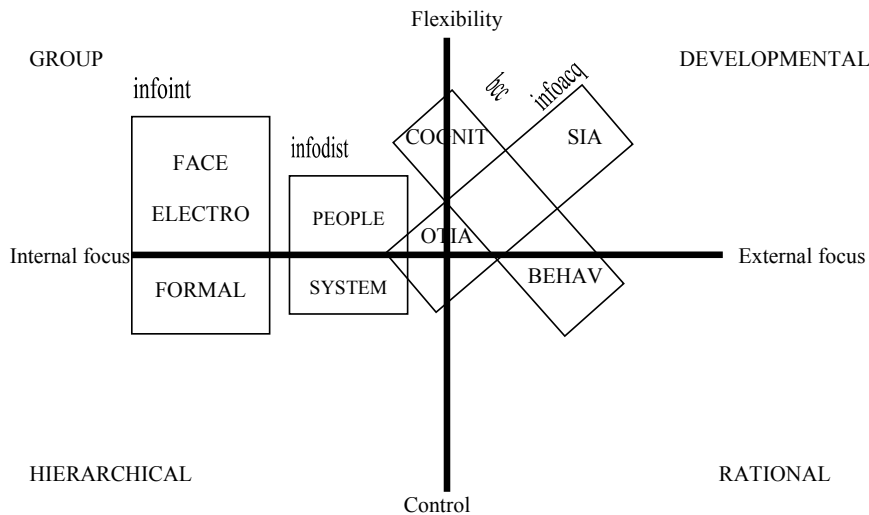
### *3.1 Organisational learning culture measures*

We will use the CVF developed by Denison and Spreitzer (1991) to describe the concept of organisational learning culture in detail. The key characteristics of organisational learning culture are described by placing them in the two-dimensional chart of the CVF. As shown in Figure 3, the main characteristics are positioned in the upper quadrants – flexibility orientation.

**Figure 2** The conceptualised research method



**Figure 3** The placement of organisational learning culture in the competing values framework



Information gathering is a main characteristic of a learning culture. The items are grouped into two scales (Appendix A, p.600): strategic information acquisition (SIA – IA6), which is externally oriented, market driven, centres on long-term future and is the basis for the firm’s future direction; and operational and tactical information acquisition (OTIA – IA1), which is internally oriented and short term in nature. Operative business decisions are based on this. Operational information is acquired within the company, while tactical information usually comes from both within and outside the company.

The next phase, after the information is gathered, is information distribution. Several channels and conduits exist that allow for information distribution. Brown and Duguid (1991) and Koffman and Senge (1993) rely more on ‘people’ (employees are acquainted with goals, take part in cross-functional teams, are involved in various forms of person-to-person communication for information dissemination, etc. – PEOPLE – ID1 and ID2),

while others rely on 'systems' (e.g. information system, organised meetings to inform employees and formalised mechanisms and systems to facilitate the transfer of best practices – SYSTEM) (Zagoršek et al., 2009).

After the information is gathered and distributed, interpretation and placement of the information within a specific environmental context is necessary to give the information sense and value for employees. Information can be interpreted in one of the following contexts: face-to-face contacts (FACE – II1 and II2), by electronic media (intranet and forums) (ELECTRO) and in more formal settings (FORMAL – II3 and II4).

After the information is gathered and understood, and placed in a context, cognitive changes are about to come out (COGNIT – BCC8, BCC9, BCC10 and BCC11). With the new information, employees recognise things from a different perspective and have a better insight regarding the functioning of the organisation. Employees have to be open minded to accept these changes.

Finally, the learning process is achieved when there is a change in the behaviour of the employees (BEHAV – BCC2, BCC4, BCC5 and BCC7), which is based on the received information and the way that the information is comprehended by the employees. The aim of behavioural changes is achieving goals – from productivity increase to overall improvement in the performance.

An organisational learning culture contains elements of all four ideal types of cultures defined in the CVF. Information acquisition of strategic information as one of the attributes of the learning culture possesses some of the characteristics of the developmental culture in CVF. The gathering of operational and tactical information requires group, developmental and formal culture-type characteristics. For a formal interpretation of information elements, the hierarchal culture type is more appropriate. Cognitive changes have elements of group and developmental cultures, while the rationality of behavioural changes coincides with the characteristics of rational culture. An organisational learning culture manages to cover all four types of cultures presented in the CVF. This is shown in Figure 3.

As previously discussed, we understand the concept of organisational learning culture as a set consisting of four elements: information acquisition (Infoacq), information distribution (Infodist), information interpretation (Infoint) and behavioural and cognitive changes (Bcc). For their formation, nine composite scores of items are used (OTIA, SIA, PEOPLE, SYSTEM, FACE, FORMAL, ELECTRO, BEHAV, MC and COGNIT).

### *3.2 Organisational performance measures*

Having reviewed how performance is measured in different research papers (Gunasekaran et al., 2005; Garcia-Morales et al., 2007; Škerlavaj et al., 2007), we have built upon the idea of Freeman's stakeholder theory (Freeman, 1984; Freeman, 1994). We therefore cover the perspectives of employees, customers and suppliers, which represent non-financial organisational performance measurement. Besides that, we also include the measurement of financial performance for owners. Thus, we have four constructs of organisational performance.

As stated in the literature review, due to specific issues regarding organisational performance measurement in transitional or less-developed countries (e.g. Peng and Luo, 2000; Tang and Peng 2003; Deshpandé and Farley, 2004; Wall et al., 2004; Acquah and Eshun, 2010), we use self-assessment. Not much information about financial performance of Macedonian companies is available, nor is it considered reliable.

Performance from an employee perspective (Emp) includes two composite scores of items, one measuring objective performance measures (EMPOBJ), and the other one, subjective measures (EMPSUB). Performance from a customer point of view (Cust) includes four measurement items (CUST1-4), whereas performance as seen from a supplier point of view (Sup) includes one composite score of items (SUPPLIER). Two items for financial performance were included, one measuring return on assets (ROA), and the other one measuring value added per employee (VAEMP). Both are relative to other organisations in the respondent's industry.

## **4 Research methodology**

### *4.1 Research instrument*

The research concept proposed by Koufteros (1999) was used in order to test our hypothesis. The questionnaire was developed on the basis of the previous theoretical contributions in order to ensure content validity. On the basis of the previous research conducted on a sample of Slovenian companies, the same research methodology was applied to a sample of Macedonian companies.

The same set of measurement items was expanded and included 48 items for organisational learning culture and 21 different aspects of organisational performance (Appendix A, p.600). The same questionnaire was used (five-point Likert scales for the organisational learning culture items and five-point semantic differentials for those items measuring performance of the organisation).

### *4.2 Data collection and sample characteristics*

For the analysis, empirical data were collected for 202 Macedonian companies in autumn 2007. A translation-back-translation procedure was used. One of the authors fluent in both languages translated the original English-based scales into Macedonian. Another author, also fluent in both languages, back-translated the Macedonian version into English, and also again revised the Macedonian version of the questionnaire to create the final version of the surveys. The measures and scales were adjusted to a different context, especially the ones gathering information about the companies concerning the standard industry classification used in Macedonia and the Macedonian legislation considering the size of companies in terms of revenues. Pre-tested and validated questionnaire in the context of Slovenia was sent to 400 Macedonian companies, which means the response rate was 50.5%.

The questionnaire contains questions about the influence of the different elements of the organisational learning and business process orientation on organisational performance. The questionnaire is divided into three parts. The first part requires estimation of the different elements of the organisational working process of the assigned organisation. The second part aims for the assessment of the business results of the organisation, while the third part is mainly demographic data.

The data were collected from companies with a different number of employees, with a different annual income and from a different industry type. Thus, the sample is constructed of diversified companies. The demographic data from the questionnaire provides us with significant information about the structure of the respondents. Let us

first consider the structure of the respondents by the industry type. The majority of the companies are in the manufacturing sector (30%), wholesale and retail trade (21%), financial intermediation (10%), other communal, cultural, social, and personal service activities (8%) and construction (6%). On the basis of the information about the companies in different industry types in the Macedonian economy (as unreliable as such information may be), we can conclude that this sample is representative of the population.

Regarding the size of the companies by number of employees, we come with the figures shown in Table 1.

**Table 1** Structure of respondents by number of employees

<i>Number of employees</i>	<i>Number of companies</i>	<i>Number of companies (in %)</i>
1–49	49	24.3
50–249	98	48.5
250–499	27	13.4
500–999	13	6.4
1000 and more	12	5.9
Not given	3	1.5
Total	202	100.0

The structure of the respondents is different when we have annual income as a measure of the size of the company. Almost evenly (~37%), the companies are distributed in the first group (annual revenue below 7,000,000 EUR) and second group (annual revenue between 7,000,000 EUR and 28,000,000 EUR). Only 18.8% of the companies have income higher than 28,000,000 EUR. Based on the structure of the respondents by annual income, the sample is representative of the context as a whole. The sample, however, underrepresents small companies (less than 50 employees) based on the ‘number of employees’ criterion.

The last of the demographic data is the function of the respondent – the person responsible for the data given in the questionnaire. The desired structure has the majority of respondents from top management, which is preferred because they can provide information about the strategic aspects of the company. However, the actual situation shows different results. A total of 32.4% of the respondents are from the category ‘Other’. This is a category that is mostly consisted of middle- and low-level managers. The category ‘CEO or managing director of the company’ represents 21.8% of the total respondents. The non-managers category has 18.3% of the respondents of the questionnaire.

### 4.3 Research methods

For validation of the measurement instruments and modelling the structural relationships among various constructs of organisational learning culture and organisational performance, a combined exploratory–confirmatory approach is used. Koufteros’ (1999) approach is applied in our study. The data are first processed with the exploratory factor analysis (Appendix B, p.604), which gives us an early insight, but does not provide us with an explicit test of uni-dimensionality (Gerbing and Anderson, 1988; Segars and Grover, 1993).

Additionally, we applied confirmatory factor analysis (CFA) using LISREL 8.54 software package. Convergent validity and uni-dimensionality were examined by the loading paths of all items, which are statistically significant if they exceed 0.50 (Prajogo and McDermott, 2005). In the iterative process of purifying the scales, several items (measurement variables) were excluded from the further analysis. In the final version of the model, 57 of 69 items were used to measure 27 constructs and first-order factors. For the second-order factors Infoacq, Infodist, Infoint, Bcc and Emp, simple second-order models were run prior to combining the constructs FACE, FORMAL, BEHAV, COGNIT, MC, EMPSUB and EMPOBJ into aggregates of involved variables. Constructs PEOPLE, SYSTEM and ELECTRO were excluded after the CFA.

A composite reliability index (CRI) and average variance extracted (AVE) were calculated in order to test the composite (construct) reliability. Composite reliability assumes that a set of latent construct indicators is consistent in the measurement. Construct reliability is a measure of reliability and internal consistency of the measured variables representing a latent construct, and it must be established before construct validity can be assessed. AVE is similar to CRI with one exception that the standardised loadings are squared before summing them. Variance extracted is a summary measure of convergence among a set of items representing latent constructs. It is the average percentage of variation explained among the items (Hair et al., 1998, Koufteros, 1999). The cutoff value most used for AVE is 0.50.

As there is a plethora of fit indices that can be used in order to test the fit at the global level, research evidence supports the idea to use more than one index. Chi-square ( $\chi^2$ ) per degrees of freedom, comparative fit index (CFI) and non-normed fit index (NNFI) are used most often to assess the fitness of the model. The ratio  $\chi^2$  per degrees of freedom should not exceed 2, while models that have CFI and NNFI indices greater than 0.90 have a proper fit. The cutoff value suggested by some research is 0.95 (Coenders et al., 2003). The multivariate normality test for continuous variables showed non-normal distribution of the data, for which it is necessary to use the Satorra–Bentler  $\chi^2$  test.

For structural relationships among constructs, structural equation modeling (SEM) was used for the following reasons, similar as in Prajogo and McDermott (2005): (1) to allow for the modelling of both observed and latent variables, and (2) to test several structural relationships simultaneously. Here, the maximum likelihood (ML) method was used to estimate the values of the parameters. In the end, overall coefficients of determination ( $R^2$ ) are calculated for each endogenous variable in order to explain the amount of variation in the endogenous variable explained by the model.

## **5 Data analysis**

### *5.1 Validity and reliability*

In Table 2, we report factor loadings as results from the CFA. We decided to exclude construct IA2, IA3, IA4, IA5 and II5 loadings and also VAEMP because of the negative error.



**Table 2** Confirmatory factor analysis

<i>Observed variables (constructs)</i>	<i>Factor loadings</i>		<i>Latent variables</i>	<i>Factor loadings</i>
IA1	7.62		Infoacq	
IA2	9.06	←	Infoacq	3.81
IA3	8.27	←	Infoacq	3.8
IA4	11.61	←	Infoacq	2.54
IA5	10.42	←	Infoacq	1.23
IA6	8.75	←	Infoacq	5.81
ID1	7.79		Infodist	
ID2	6.78	←	Infodist	6.68
II1	5.14		Infoint	
II2	8.26	←	Infoint	5.45
II3	6.9	←	Infoint	5.43
II4	8.54	←	Infoint	5.7
II5	7.76	←	Infoint	2.35
BCC	5.14		Bcc	
CC	6.33	←	Bcc	7.9
MC	5.84	←	Bcc	8.8
ROA	5.5		Fp	
VAEMP	-0.42	←	Fp	2.99
SUP1	7.22		Sup	
SUP2	6.72	←	Sup	5.79
SUP3	7.41	←	Sup	4.04
EMPOBJ	5.35		Emp	
EMPSUB	9.12	←	Emp	6.32
CUST1	8.02		Cust	
CUST2	6.96	←	Cust	12.41
CUST3	6.97	←	Cust	9.01
CUST4	5.38	←	Cust	8.13

Analysis of second-order models for Infoacq, Infodist, Infoint, Bcc, Emp, Cust and Sup provided empirical justification for combining constructs into aggregates. Fit indices for all four second-order models are satisfactory. The values of CRI as well as AVE are presented in Table 3 for all scales and constructs of the final measurement model. All CRI values exceed the milder threshold for composite reliability (0.60), except for EMPSUB, which was nevertheless left out from the model due to content considerations. The same can be said about AVE, where values for all latent variables and scales exceed 0.50.

**Table 3** Construct reliability

<i>Latent variable</i>	<i>Aggregates of items</i>	<i>Number of items (final)</i>	<i>CRI</i>		<i>AVE</i>	
Infoacq	OTIA	1	0.68		0.51	
	SIA	1				
Infodist	ID1	1	0.69		0.53	
	ID2	1				
Infoint	FACE	2	0.71	0.65	0.55	0.48
	FORMAL	2		0.68		0.52
Bcc	BC	5	0.86	0.65	0.68	0.55
	CC	3		0.71		0.57
	MC	4		0.66		0.55
Emp	EMPOBJ	8	0.65	0.59	0.54	0.47
	EMPSUB	2	0.59	0.49	0.50	0.4
Cust	CUST1	1	0.91		0.71	
	CUST2	1				
	CUST3	1				
	CUST4	1				
Sup	SUP1	1	0.76		0.51	
	SUP2	1				
	SUP3	1				
Fp	ROA	1	1		1	

The results of fitting the structural model to the data show that the model had a good fit as pointed out by  $\chi^2/df = 1.86$ , NNFI = 0.901 and CFI = 0.916. In Figure 4, the path diagram of our model is presented. Standardised values of path coefficients are presented with *t*-values in brackets. Overall coefficients of determination ( $R^2$ ) are also presented for each one of the endogenous constructs.

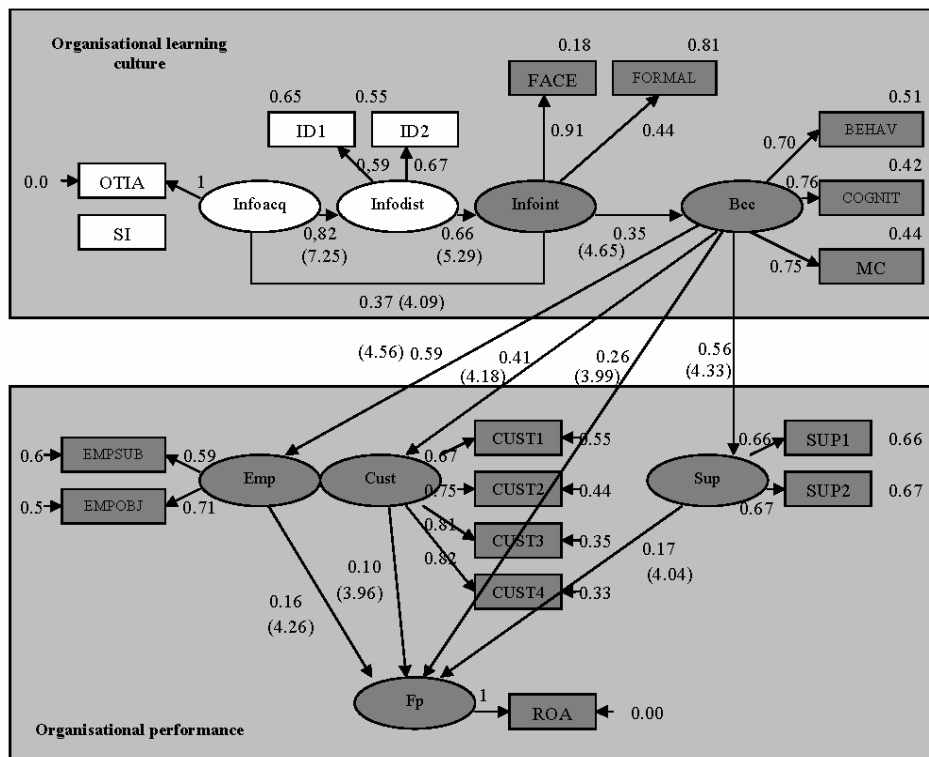
### 5.2 *The relationship between organisational learning culture and organisational performance*

The purpose of this research is to test the structural relationship between organisational learning culture and organisational performance. In a culture that has characteristics of an organisational learning culture, the processes of information acquisition, information distribution, information interpretation and behavioural and cognitive changes are mostly valued. The acquired information needs to be distributed, interpreted and converted into action in order for organisational learning to be achieved. For this reason, we make the sequential structuring of elements of an organisational learning culture.

A mix of exploratory and confirmatory approaches was used for generating the model to achieve the final goal of creating a model that makes both theoretical sense and has reasonable correspondence to the data. Valuing only the acquisition of operational and tactical information will lead to better understanding and interpretation of the acquired information. The effect is relatively strong (standardised value = 0.37,  $t = 4.09$ ).

Information distribution has strong influence on the interpretation of the information (standardised value = 0.66,  $t = 5.29$ ). Organisations that place significant importance on channels of information interpretation (the emphasis is on the face-to-face and formal channels) will notice the impact on behavioural and cognitive changes. The effect is positive, even though it is not very strong (effect = 0.35,  $t = 4.65$ ).

**Figure 4** The model of relationships among organisational learning culture and organisational performance constructs



Behavioural and cognitive changes have a relatively high impact on the performance from the employee, customer and supplier perspectives, and also have (lower) effect on financial performance. This effect is strongest on the employee performance (effect = 0.59,  $t = 4.56$ ) and on the performance from the suppliers' perspective (effect = 0.56,  $t = 4.33$ ). Customer performance is also under the significant influence of behavioural and cognitive changes (effect = 0.41,  $t = 4.18$ ). The effect that behavioural and cognitive changes have on financial performance is moderate (effect = 0.26,  $t = 3.99$ ) but positive. A direct impact on financial performance is also noticed from the employee perspective (effect = 0.16,  $t = 4.26$ ), from the customer perspective (effect = 0.10,  $t = 3.96$ ) and from the supplier perspective (effect = 0.17,  $t = 4.04$ ). Even though positive, the effects are still small.

## 6 Discussion and implications

The process of transformation of acquired information, distribution of that information and its interpretation so that it can have an effect on the behavioural and cognitive changes is confirmed by *Hypotheses 1, 2, and 3*. Organisations need to acquire, distribute and interpret all types of information. The emphasis in Macedonian companies is on operational and tactical information, not on strategic information. This could be the outcome of the previous system of self-management, where long-term planning (unlike short-term, which was within the companies' decision-making) was not part of the autogestion, but was carried out centrally by the state.

What is interesting is that the results showed employees in Macedonian firms use face-to-face channels for interpreting information more than they use formally institutionalised channels. At first glance, this contrasts the general description of information flow in Macedonian firms, which are supposed to be centralised and top-down oriented. This is usually associated with formal communication. However, because instructions, explanations and orders are given out by managers in higher hierarchical organisational levels, these are obviously not communicated through formal channels, but rather personally, face-to-face. This shows more in detail the autocratic leadership style of Macedonian managers. They clearly use personal communication, especially when helping employees interpret acquired information. This could be a result of formal communication systems in Macedonian firms being underdeveloped. Furthermore, it indicates a lack of a formal chain of reporting and confirms the top-down orientation of communication.

The results could not confirm the use of electronic channels for information interpretation. This further indicates that Macedonian companies lack the much needed organisational control in this area, and that formally established structured systems for the organisational learning process need to be more efficient. It also points out the not yet fully developed electronic and IT infrastructure in Macedonian companies.

The results based on the data gathered from Macedonian companies confirm that when the information is properly understood and valued, positive changes appear. This should result in better performance of operational and strategic tasks, improved productivity and increased employee satisfaction. Thus, based on the results, organisational learning culture should be encouraged in organisations. What is more, companies should be making an effort to integrate it in the company's norms and values so that the learning process of acquiring, distributing and interpreting information is fully accepted by the employees.

From these results, we can make the basic conclusion that an organisational learning culture has an influence on organisational performance. The impact is direct and relatively strong on all three elements of non-financial performance (*Hypotheses 4–9*). The effect is almost equal in performance from employee and supplier perspectives. A weaker effect can be noticed on the performance from a customer perspective, although generally speaking it is not that much smaller. A direct but relatively smaller effect of organisational learning culture can also be noticed on financial performance (*Hypothesis 7*). An indirect effect on financial performance through employee, customer and supplier performance is recorded, even though this effect is much smaller than other effects (*Hypotheses 8–10*).

The results once again validate the importance of organisational learning culture in organisational performance as a complex entity consisting of both financial indicators on the one hand, and important stakeholders on the other. For managers, this means that one of the keys to their success, especially when they are working in a highly competitive environment, is the ability to adapt, learn and give feedback to rapidly changing business environments, both internal and external. However, one has to be aware that promoting organisational learning culture alone will not lead to success. This has to be accompanied with solid management, a good organisational climate and even government policies that stimulate business performance. The Macedonian economy has plenty of room for improvement in all three areas.

The findings of our analysis demonstrated that rigidity and resistance to change and learning leads to poor results from the perspective of all stakeholders. Modern managers must understand the constant need for acquiring and distributing new knowledge, for themselves and their employees. A system that allows the constant flow of new and useful external and internal information and knowledge needs to be implemented so that it can be part of the organisation that cultivates a learning culture. This is also true, as our research showed, in Macedonia, a developing country in transition.

Given that Macedonian top managers are highly autocratic and decision-making is centralised, they could use their formal power to begin to establish an organisational learning process that will be embodied in the organisational culture of their firms. However, in order for that to happen, the autocratic style of leadership must not prevent the employees from free information sharing, which is necessary in organisational learning culture development. It is obvious from the results presented that not all elements and stages of the organisational learning process are adequately developed. Macedonian firms need to loosen the chains of a former economic system and pay more attention to long-term, strategic information and planning. Establishment of electronic channels for sharing information is needed as well, and with the development, further penetration and greater use of IT, there are good reasons to expect this trend in the following years.

The valid and reliable measures of all organisational performance constructs used in this research also show that it is important to consider employees, suppliers and customers when evaluating organisational performance. Managers must therefore acknowledge opinions of all stakeholders. They should provide feedback that is valuable as a potential initiative for new business process changes, which could potentially lead to organisational performance improvement.

An important contribution of our paper is the inclusion of an additional phase of the organisational learning process in our research model, based on the theoretical conceptualisation of Huber (1991). Information distribution, through people or communication systems, follows the information acquisition phase and is an important and valid addition to the research model previously tested in different contexts.

## **7 Conclusion and future research**

The study shows that an organisational learning culture, a construct often neglected in organisation learning and knowledge management research, has important effects on non-financial performance, as perceived from the three main stakeholders, and on

financial performance. The data gathered from Macedonian companies, a country in transition where data are not easy to obtain, represents a valuable means for generalisation of a research model previously tested in more-developed economies.

The first methodological limitation is the inability to directly draw conclusions through a causal difference because of the cross-sectional nature of the data gathered. The SEM technique needs to be performed on the basis of previous research findings. Other research designs such as experimental or longitudinal studies are desirable when examining relationships among organisational variables (Egan et al., 2004), even though they are rare due to data-gathering problems. Our sample underrepresented small companies based on the 'number of employees' criterion (but not on the 'annual revenue' criterion). Nonetheless, the effect organisational learning culture has on advancing various perceptions of organisational performance is clear and statistically significant.

Another limitation of our research is connected to measurement. Self-assessment is not an ideal solution, especially for measuring performance, but it seems to be the most appropriate way in a developing country, such as Macedonia, where data about the company performance are not available or are difficult to obtain and are not reliable. Due to the fact that the study was previously conducted in the contexts of more-developed countries, it would be impossible to compare the findings if completely different measurement scales were used. However, as most measures of performance are perception based and are not based on hard data or multi-source assessment, there may be a problem of bias. Cultural difference also affects perceptions of organisational performance (Khadra and Rawabdeh, 2006). This may, in fact, present even more of a problem in a transitional country, as statistical data are non-existing. Also, since respondents were asked to compare themselves with their competition or the market or industry average, positive bias can easily occur, as imperfections of human cognition play a significant role (Gilovich et al., 2002).

Future research should consider the effect of national culture and other contextual variables on organisational culture development and change. It would be interesting to conduct a study on Macedonian national culture and take into account the influence of its characteristics. Case studies should also be performed to further validate our findings to provide a deeper understanding of the relationship of the constructs proposed in our model. Due to the importance of organisational learning culture development, a stream of research will hopefully emerge, providing further research of this construct. Plenty of studies focused on organisational learning or organisational culture, some linking these constructs and many others need to emerge in order to provide greater generalisation of findings.

## References

- Acquaah, M. and Eshun, J.P. (2010) 'A longitudinal analysis of the moderated effects of networking relationships on organizational performance in Sub-Saharan African economy', *Human Relations*, Vol. 63, No. 5, pp.667–700.
- Argyris, C. and Schon, D.A. (1996) *Organizational Learning II: Theory, Method and Practice*, Addison-Wesley, Reading, MA.
- Bapuji, H. and Crossan, M. (2004) 'From questions to answers: reviewing organizational learning research', *Management Learning*, Vol. 35, No. 4, pp.397–417.
- Becker, H.S. (1982) 'Culture: a sociological view', *Yale Review*, Vol. 71, No. 4, pp.513–527.

- Berman, S.L., Wicks, A.C., Kotha, S. and Jones, T.M. (1999) 'Does stakeholder orientation matter? The relationship between stakeholder management models and a firm's financial performance', *Academy of Management Journal*, Vol. 42, No. 5, pp.488–506.
- Bhattacharya, G. (1985) 'Strategic learning and entry – equilibrium', *Journal of Economic Dynamics and Control*, Vol. 9, No. 3, pp.195–224.
- Bontis, N., Hulland, J. and Crossan, M.M. (2002) 'Managing an organizational learning system by aligning stocks and flows', *Journal of Management Studies*, Vol. 39, No. 4, pp.437–469.
- Brown, J.S. and Duguid, P. (1991) 'Organizational learning and communities of practice: toward a unified view of working, learning, and innovation', *Organization Science*, Vol. 2, No. 1, pp.40–50.
- Coenders, G., Casa, F., Figuer, C. and Gonzales, M. (2003) 'Relationship between parents' and children's values and children's overall life satisfaction – a comparison across countries', *Proceedings of the 5th Conference of the International Society for Quality-of-Life Studies*, Johan Wolfgang Goethe-University, Frankfurt am Main, Germany.
- Cyert, R.M. and March, J.G. (1963) *A Behavioral Theory of the Firm*, Prentice-Hall, Englewood Cliffs, NJ.
- Darroch, J. (2005) 'Knowledge management, innovation and firm performance', *Journal of Knowledge Management*, Vol. 9, No. 3, pp.101–115.
- Denison, F.R. and Spreitzer, G.M. (1991) 'Organizational culture and organizational development: a competing values approach', *Research in Organizational Change and Development*, Vol. 5, No. 1, p.121.
- Deshpandé, R. and Farley, J.U. (2004) 'Organizational culture, market orientation, innovativeness, and firm performance: an international research odyssey', *International Journal of Research in Marketing*, Vol. 21, No. 1, pp.3–22.
- DiBella, A., Nevis, E. and Gould, J. (1996) 'Understanding organizational learning capability', *Journal of Management Studies*, Vol. 33, No. 3, pp.361–379.
- Dimovski, V. (1994) *Organizational Learning and Competitive Advantage*, PhD Thesis, Cleveland State University, Cleveland, OH.
- Freeman, E.R. (1984) *Strategic Management – A Stakeholder Approach*, Pitman, London.
- Freeman, E.R. (1994) 'Politics of stakeholder theory: some future directions', *Business Ethics Quarterly*, Vol. 4, No. 4, pp.409–422.
- Egan, T.M., Yang, B. and Bartlett, K.R. (2004) 'The effects of organizational learning culture and job satisfaction on motivation to transfer learning and turnover intention', *Human Resource Development Quarterly*, Vol. 15, No. 3, pp.279–301.
- Garcia-Morales, V., Llorens-Montes, F. and Verdu-Jover, A. (2007) 'Influence of personal mastery on organizational performance through organizational learning and innovation in large firms and SMEs', *Technovation*, Vol. 27, No. 9, pp.547–568.
- Garvin, D.A. (1993) 'Building a learning organization', *Harvard Business Review*, Vol. 71, No. 4, pp.78–91.
- Gerbing, D.W. and Anderson, J.C. (1988) 'An updated paradigm for scale development incorporating unidimensionality and measurement error', *Journal of Marketing Research*, Vol. 25, No. 2, pp.186–192.
- Gilovich, T., Griffin, D. and Kahneman, D. (2002) *Heuristics and Biases*, Cambridge University Press, Cambridge, UK.
- Gunasekaran, A., Williams, H.J. and McGaughey, R.E. (2005) 'Performance measurement and costing system in new enterprise', *Technovation*, Vol. 25, No. 5, pp.523–533.
- Hair, J.F., Anderson, R.E., Tatham, R.L. and Black, W.C. (1998) *Multivariate Data Analysis*, 6th ed., Prentice-Hall, London.
- Hamner, W.C. (1974) 'Reinforcement theory and contingency management in organizational settings', in Tosi, H.C. and Hamner, E.C. (Eds): *Organizational Behavior and Management: A Contingency Approach*, St. Clair Press, Chicago, IL.

- Hatch, M.J. (1993) 'The dynamics of organizational culture', *Academy of Management Review*, Vol. 18, No. 4, pp.657–693.
- Hernaus, T., Škerlavaj, M. and Dimovski, V. (2008) 'Relationship between organisational learning and performance: the case of Croatia', *Transformations in Business and Economics*, Vol. 7, No. 22, pp.32–48.
- Huber, G.P. (1991) 'Organizational learning: the contributing process and the literatures', *Organization Science*, Vol. 2, No. 1, pp.88–115.
- Hung, R.Y.Y., Yang, B., Lien, B.Y., McLean, G. and Kuo, Y. (2010) 'Dynamic capability: impact of process alignment and organizational learning culture on performance', *Journal of World Business*, Vol. 45, No. 1, pp.285–294.
- Jones, G.R. (2000) *Organizational Theory*, 4th ed., Prentice-Hall, New York, NY.
- Kaplan, R.S. and Norton, D.P. (1992) 'Balanced scorecard – measures that drive performance', *Harvard Business Review*, Vol. 70, No.1, pp.71–79.
- Kaplan, R.S. and Norton, D.P. (1993) 'Putting the balanced score card to work', *Harvard Business Review*, Vol. 71, No.5, pp.137–147.
- Kaplan, R.S. and Norton, D.P. (1996) 'Using the balanced scorecard as strategic management system', *Harvard Business Review*, Vol. 74, No.1, pp.75–85.
- Khadra, M.F.A. and Rawabdeh, I. (2006) 'Assessment of development of the learning organization concept in Jordanian industrial companies', *The Learning Organization*, Vol. 13, No. 5, pp.455–474.
- Koffman, F. and Senge, P.M. (1993) 'Communities of commitment: the heart of learning organizations', *Organizational Dynamics*, Vol. 22, No. 2, pp.5–23.
- Koufteros, X.A. (1999) 'Testing a model of pull production: a paradigm for manufacturing research using structural equation modelling', *Journal of Operations Management*, Vol. 17, No. 14, pp.467–488.
- Ledford, G.E., Wendnhof, J.R. and Strahley, J.T. (1995) 'Realizing a corporate philosophy', *Organizational Dynamics*, Vol. 23, No. 3, pp.5–19.
- Lee, C., Tam, B. and Chiu, J. (2008) 'The impact of organisational culture and learning on innovation performance', *International Journal of Innovation and Learning*, Vol. 5, No. 4, pp.413–428.
- Lu, X. and Li, M. (2008) 'Development of organization's learning culture and its impact on organizational performance', *Proceedings of the 4th International Conference on Wireless Communications, Networking and Mobile Computing*, 12–14 October, Dalian, China.
- Martin, J. (1992), *Cultures in Organizations*, Oxford University Press, New York, NY.
- McDermott, C.M. and Stock, G.N. (1999) 'Organizational culture and advanced manufacturing technology implementation', *Journal of Operations Management*, Vol. 17, No. 5, pp.521–533.
- Murray, P. and Donegan, K. (2003) 'Empirical linkages between firm competencies and organizational learning', *The Learning Organization*, Vol. 10, No. 1, pp.51–62.
- Neely, A. (2005) 'The evolution of performance measurement research development in the last decade and research agenda for the next', *International Journal of Operations and Production Management*, Vol. 25, No. 12, pp.1264–1277.
- Nonaka, I. and Takeuchi, H. (1995) *The Knowledge-Creating Company*, Oxford University Press, New York, NY.
- Peng, M.W. and Luo, Y. (2000) 'Managerial ties and firm performance in a transition economy: the nature of a micro-macro link', *Academy of Management Journal*, Vol. 43, No. 3, pp.486–501.
- Pérez López, S., Montes Peón, J.M. and Ordás, J.V. (2004) 'Managing knowledge: The link between culture and organizational learning', *Journal of Knowledge Management*, Vol. 8, No. 6, pp.93–104.



- Prajogo, D.I. and McDermott, C.M. (2005) 'The relationship between total quality management practices and organizational culture', *International Journal of Operations and Production Management*, Vol. 25, No. 11, pp.1101–1122.
- Prieto, I.M. and Revilla, E. (2006) 'Assessing the impact of learning capability on business performance: empirical evidence from Spain', *Management Learning*, Vol. 37, No. 4, pp.499–522.
- Prokesch, S.E. (1997) 'Unleashing the power of learning: an interview with British Petroleum's John Browne', *Harvard Business Review*, Vol. 75, No. 5, pp.147–168.
- Ray, G., Barney, J.B. and Muhanna, W.A. (2003) 'Capabilities, business processes, and competitive advantage: choosing the dependent variable in empirical tests of the resource-based view', *Strategic Management Journal*, Vol. 25, No. 1, pp.23–37.
- Richard, P.J., Devinney, T.M., Yip, G.S. and Johnson, G. (2009) 'Measuring organizational performance: towards methodological best practice', *Journal of Management*, Vol. 35, No. 3, pp.718–804.
- Schein, E.H. (1985) *Organizational Culture and Leadership*, Jossey-Bass, San Francisco, CA.
- Schon, D.A. (1975) 'Deutero-learning in organizations: learning for increased effectiveness', *Organizational Dynamics*, Vol. 4, No. 1, pp.2–16.
- Segars, A.H. and Grover, V. (1993) 'Re-examining perceived ease of use and usefulness: a confirmatory factor analysis', *MIS Quarterly*, Vol. 14, No. 4, pp.517–525.
- Senge, P. (1990) *The Fifth Discipline: The Art and Practice of the Learning Organization*, Doubleday, New York, NY.
- Slater, S.F. and Narver, J.C. (1995) 'Market orientation and the learning organization', *Journal of Marketing*, Vol. 59, No. 3, pp.305–318.
- Škerlavaj, M. and Dimovski, V. (2006a) 'Study of the mutual connections among information-communication technologies, organizational learning and business performance', *Journal of East European Management Studies*, Vol. 11, No. 1, pp.9–29.
- Škerlavaj, M. and Dimovski, V. (2006b) 'Influence of organizational learning on organizational performance from the employee perspective: the case of Slovenia', *Management*, Vol. 11, No. 1, pp.75–90.
- Škerlavaj, M., Indihar Štemberger, M., Škrinjar, R. and Dimovski, V. (2007) 'Organizational learning culture – the missing link between business process change and organizational performance', *International Journal of Production Economics*, Vol. 106, No. 2, pp.346–367.
- Tang, J. and Peng, M.W. (2003) 'Organizational slack and firm performance during economic transitions: two studies from an emerging economy', *Strategic Management Journal*, Vol. 24, No. 13, pp.1249–1263.
- Tangem, S. (2004) 'Performance measurement: from philosophy to practice', *International Journal of Productivity and Performance Management*, Vol. 53, No. 8, pp.726–737.
- Treacy, M. and Wiersema, F. (1995) *The Discipline of Market Leaders: Choose Your Customers, Narrow Your Focus, Dominate Your Market*, Addison-Wesley, Reading, MA.
- Uhlener, L.M., van Stel, A.J., Meijaard, J. and Folkeringa, M. (2007) *The Relationship Between Knowledge Management, Innovation and Firm Performance: Evidence from Dutch SMEs*, Research Report No. H200704, EIM.
- Wall, T.D., Michie, J., Patterson, M., Wood, S.J., Sheehan, M., Clegg, C.W. and West, M. (2004) 'On the validity of subjective measures of company performance', *Personnel Psychology*, Vol. 57, No. 1, pp.95–118.
- Wang, X., Yang, B. and McLean, G.N. (2007) 'Influence of demographic factors and ownership type upon organizational learning culture in Chinese enterprises', *International Journal of Training and Development*, Vol. 11, No. 3, pp.154–165.
- Wiener, Y. (1988) 'Forms of value systems: a focus on organizational effectiveness and cultural change and maintenance', *Academy of Management Review*, Vol. 13, No. 4, pp.534–544.

- Wittrock, M.C. (1974) 'Learning as a generative process', *Educational Psychologist*, Vol. 11, No. 2, pp.87–95.
- Wittrock, M.C. (1990) 'Generative process of comprehension', *Educational Psychologist*, Vol. 24, No. 4, pp.345–376.
- Wittrock, M.C. (1992) 'Generative learning process of the brain', *Educational Psychologist*, Vol. 27, No. 4, pp.531–541.
- Wolf Morrison, E. (1993) 'Longitudinal study of the effects of information seeking on newcomer socialization', *Journal of Applied Psychology*, Vol. 78, No. 3, pp.173–183.
- Zack, M., McKeen, J. and Singh, S. (2009) 'Knowledge management and organizational performance: an exploratory analysis', *Journal of Knowledge Management*, Vol. 13, No.6, pp.392–409.
- Zagoršek, H., Dimovski, V. and Škerlavaj, M. (2009) 'Transactional and transformational leadership impacts on organizational learning', *Journal of East European Management Studies*, Vol. 14, No. 2, pp.144–165.

**Appendix A List of measurement items**

<b>Information acquisition</b>	
IA1	Employees in our organisation are an extremely important source of information.
IA2	Previous decisions are a very useful source of information for current decisions.
IA3	New business methods and services are always worth trying even if they may prove risky.
IA4	Reports prepared by external experts are an extremely important source of information.
IA5	Our organisation uses clipping service – regular collection of papers and articles to our interest.
IA6	Our competitors are an extremely important source for learning new methods and services.
IA7	Expertise in the industry, products and services is an extremely important criterion for hiring a new employee.
IA8	Joint tasks and mergers contribute a great deal of knowledge about industry and economic environment, new methods and services/products.
IA9	Top managers in any important decision seek information or advice from the board of directors or owners (in general).
IA10	Top managers in any important decision seek information or advice from sources outside the company (hiring experts, contacting top managers of other companies, etc).
IA11	Our organisation has employees whose job is related to searching for external information.
IA12	External sources (reports, consultants, newsletters, etc.) are extremely important for the operations of our organisation.
IA13	In our organisation, we explicitly reward employees who are a source of quality information.
IA14	In our organisation, we often organise internal training of our employees.
IA15	We frequently send our employees to various seminars, workshops and conferences with intention to acquire information.
<b>Information distribution</b>	
ID1	Our information system allows for efficient and effective exchange of information within the organisation.
ID2	All members of our organisation are aware what the goals of the organisation are.
ID3	We frequently hold meetings with the purpose to inform employees.
ID4	We have formal mechanisms and systems that assure transfer of best practices among various areas of work (e.g. reward systems based on group performance).
ID5	In our organisation, we have individuals who work in more than one team or project groups together with individuals from other organisational units.
ID6	We have individuals dedicated to collecting and internal dissemination of improvement propositions from employees.

<b>Information quality</b>	
IQ1	... comprehensive (all that we need).
IQ2	... accurate (close enough to the actual situation).
IQ3	... clear (allow for simple interpretation).
IQ4	... applicable (serve certain intent, e.g., decision-taking).
IQ5	... concise (there is no information overload).
IQ6	... consistent (not in contradiction according to different sources).
IQ7	... correct (true).
IQ8	... current (quickly available).
IQ9	Access to the information is simple.
IQ10	Information users in our company can self-adjust format and content of reports.
<b>Information interpretation</b>	
II1	Personal contacts
II2	Team meetings
II3	Committees as decision-makers
II4	Telephone contacts
II5	Seminars, conferences and workshops
II6	Written memos, notes, letters, etc.
II7	Special expert reports
II8	Formal chain of command reporting (in sense of reporting to superiors)
II9	Companies intranet as a mean of information interpretation
II10	Forums (e-chat and e-debates)
II11	Electronic email
II12	The more information the subordinate has, the better he/she will perform.
II13	Information to a subordinate must always be simple and concise.
<b>Behavioural and cognitive changes</b>	
<i>Behavioural</i>	
BCC1	Adaptability to environmental pressures
BCC2	Quality of products/services
BCC3	Number of products/services offered
BCC4	Technology of operation
BCC5	Speed of operations
BCC6	Introduction of new marketing approaches
BCC7	Average productivity of employees
<i>Cognitive</i>	
BCC8	Satisfaction of employees
BCC9	Overall atmosphere
BCC10	Personal communication between top managers and employees
BCC11	Team meetings' efficiency
BCC12	Employees' level of understanding of company's strategic orientation
BCC13	Employees' level of understanding of major problems in the company
BCC14	Efficiency of information systems within the company

<b>Organisational performance</b>	
	<b><i>Financial performance</i></b>
ROA	Return of assets (ROA, %) in our company is well below the industry average – Statement A Return of assets (ROA, %) in our company is well above the industry average – Statement B
VAEMP	Value added per employee in our company is well below the industry average – Statement A Value added per employee in our company is well above the industry average – Statement B
	<b><i>Non-financial performance</i></b>
	<b><i>Suppliers</i></b>
SUP1	Relationships with the suppliers are weak, unstable and mostly short term – Statement A We consider that our relationships with the suppliers are excellent, since we maintain correct partnership with them – Statement B
SUP2	We change our suppliers frequently – Statement A Our relationships with the suppliers have a long-term character – Statement B
SUP3	We do not involve our suppliers in the processes of research and development – Statement A We involve our suppliers in the processes of research and development – Statement B
	<b><i>Employees</i></b>
EMP1	The net fluctuation of employees (number of staff replaced due to the dissatisfaction with pay, relationships in the workplace, etc – memo reasons!) is very high within our company – Statement A There are no cases in our company of people leaving for internal reasons – Statement B
EMP2	Productivity of employees is much lower than the industry standard – Statement A Productivity of employees is much higher than the industry standard – Statement B
EMP3	Employee's trust in leadership is low – Statement A Employee's trust in leadership is high – Statement B
EMP4	Trust among employees themselves is weak – Statement A Trust among employees themselves is strong – Statement B
EMP5	Work organisation is inefficient – Statement A Work organisation is efficient – Statement B
EMP6	Employees do not feel special commitment to the organisation – Statement A Employees feel very committed to the organisation – Statement B
EMP7	Employees are not prepared to go the extra mile for the company – Statement A Employees are prepared to go the extra mile for the company – Statement B
EMP8	Work costs per employee are well above the industry average – Statement A Work costs per employee are well below the industry average – Statement B
EMP9	Absenteeism in our company is (relative to competition) very high – Statement A Absenteeism in our company is (relative to competition) very low – Statement B

EMP10	Employees are very dissatisfied with the situation within the company – Statement A
	Employees are very satisfied with the situation within the company – Statement B
EMP11	Learning ability and adaptability of employees is low (in comparison with the competition) – Statement A
	Learning ability and adaptability of employees is high (in comparison with the competition) – Statement B
EMP12	Risk-taking within the company is worse than it is with our competitors – Statement A
	Risk-taking within the company is better than it is with our competitors – Statement B
	<i>Customers</i>
CUST1	The number of customer complaints within the last period has increased strongly – Statement A
	The number of customer complaints within the last period has decreased strongly – Statement B
CUST2	Speed of dealing with customer complaints (comparative to the competition) is low – Statement A
	We deal with customer complaints faster than our competitors – Statement B
CUST3	We lose existing clients and do not manage to attract new ones – Statement A
	We retain existing clients and manage to attract new ones – Statement B
CUST4	Reputation of our company in eyes of the customers has declined – Statement A
	Reputation of our company in eyes of the customers has improved – Statement B

---

**Appendix B Results of exploratory factor analysis**

## INFORMATION ACQUISITION

Varimax-rotated factor loadings with Kaiser normalisation

	<i>Factor 1</i>	<i>Factor 2</i>	<i>Factor 3</i>	<i>Factor 4</i>	<i>Factor 5</i>	<i>Factor 6</i>
IA14	0.759	0.179			0.207	0.146
IA13	0.755	0.118		0.245		
IA1	0.657			-0.238	-0.321	
IA15	0.491	0.366			0.491	
IA12		0.808		0.222		0.183
IA11	0.238	0.789	0.143	-0.197		-0.195
IA6		0.103	0.773	-0.162		0.224
IA7		-0.192	0.710	0.192	0.133	-0.213
IA8		0.194	0.634	0.497		
IA3			0.112	0.848		
IA4					0.777	
IA2	0.243	0.318	-0.128	0.382	-0.387	0.371
IA10	0.239			0.236	0.233	0.652
IA9	0.122	0.143		0.299	0.183	-0.630
IA5	0.122	0.374		-0.202	0.443	0.480

Factor 1: 1, 13 and 14 – employees are important source of information, reward the employees who are quality source of information and frequent organisation of internal training for the employees – OPERATIONAL AND TACTICAL INFORMATION (accent is on the employees as valuable source of information)

Factor 2: 11 and 12 – organisation has employees whose job is to search for external information and external sources (reports, consultants and newsletters) are extremely important for the operations – STRATEGIC INFORMATION

Factor 3: 6 and 7 – competitors are important for learning new methods and services, expertise on the industry, and products and services are important for hiring new employee – STRATEGIC INFORMATION (accent is on the information from the competitors and potential employees)

Factor 4: 3 – new business methods and services are always worth trying even if they may prove risky – STRATEGIC INFORMATION (information about new and improved methods and services)

Factor 5: 4 – reports prepared by external experts are important source of information – STRATEGIC INFORMATION (accent on external experts as the source of information)

Factor 6: 10 – top managers seek information from sources outside the company in any important decision – STRATEGIC INFORMATION (accent on external sources important for top decision-making).

Please note: after confirmatory factor analysis (CFA), items IA2, IA3, IA4, IA5, IA7, IA8, IA9, IA10, IA11, IA12, IA13, IA14 and IA15 were omitted from further analysis.

INFORMATION DISTRIBUTION

	<i>Factor 1</i>	<i>Factor 2</i>
ID2	0.843	
ID1	0.718	0.212
ID3	0.694	0.277
ID5		0.785
ID6	0.302	0.622
ID4	0.292	0.607

Factor 1: 1, 2 and 3 – information system that allows efficient and effective exchange of information, the members of the organisation know the organisational goals and frequent meetings with the purpose to inform the employees – PEOPLE

Factor 2: 4, 5 and 6 – formal mechanisms and systems that assure transfer of best practices among various areas of work, individuals who work in more than one team or project and individuals who are dedicated to collecting and internal dissemination of improvement proposition from employees – SYSTEM

Please note: after CFA, items ID3, ID4, ID5 and ID6 were omitted from further analysis.

INFORMATION INTERPRETATION

	<i>Factor 1</i>	<i>Factor 2</i>	<i>Factor 3</i>	<i>Factor 4</i>	<i>Factor 5</i>
II6	0.827	0.180			0.142
II5	0.738	0.316		0.165	
III2	0.569	-0.312	0.198	0.374	-0.279
II9		0.778	0.156	0.232	
II10	0.347	0.710	-0.145		0.167
II11	0.420	0.528	0.211		-0.299
III3	0.194	-0.170	0.761		0.243
II8		0.359	0.645	0.240	
II2			0.603	0.403	
II4	0.161	0.265		0.748	0.198
II3			0.243	0.745	0.109
II1				0.276	0.761
II7	0.406	0.332	0.468		0.484

Factor 1: 5 and 6 – seminars, conferences, workshops, written memos, notes and letters – FORMAL INTERPRETATION

Factor 2: 9 and 10 – intranet and forums (e-chat and e-debates) – ELECTRO INTERPRETATION

Factor 3: 2 and 8 – team meetings and formal chain of command reporting – FORMAL AND FACE-TO-FACE INTERPRETATION



Factor 4: 3, 4 – committees as decision-makers and telephone contacts – FORMAL AND FACE-TO-FACE INTERPRETATION

Factor 5: 1 – personal contacts – PERSONAL INTERPRETATION

Please note: after CFA, items II5, II6, II7, II8, II9, II10, II11, II12 and II13 were omitted from further analysis.

#### BEHAVIOURAL AND COGNITIVE CHANGES

	<i>Factor 1</i>	<i>Factor 2</i>	<i>Factor 3</i>
BCC12	0.795	0.123	0.167
BCC13	0.700	0.135	0.279
BCC11	0.696	0.264	0.116
BCC10	0.691		0.439
BCC14	0.491	0.294	
BCC4		0.789	0.161
BCC2	0.158	0.740	0.213
BCC3	0.144	0.696	0.152
BCC5	0.290	0.634	0.238
BCC6	0.310	0.582	0.224
BCC7		0.279	0.777
BCC9	0.341	0.185	0.736
BCC8	0.360	0.202	0.712
BCC1	0.156	0.224	0.598

Factor 1: 10, 11, 12 and 13 – personal communication between top managers and employees, team meeting's efficiency, employees' level of understanding of company's strategic orientation and major problems of the company – COGNIT

Factor 2: 2, 3, 4, 5 and 6 – quality of products or services, number of products or services offered, technology of operation, speed of operations and introduction of new marketing approaches – BEHAV

Factor 3: 1, 7, 8 and 9 – adaptability to environmental pressures, average productivity of employees, satisfaction of employees and overall atmosphere – MC (mixed – cognitive and behavioural).

Please note: after CFA, item BCC13 was omitted from further analysis.

#### FINANCIAL PERFORMANCE

2 indicators, 1 factor with 79.5% variance

#### SUPPLIER PERSPECTIVE OF NON-FINANCIAL PERFORMANCE

3 indicators, 1 factor with 55.8% variance

EMPLOYEE PERSPECTIVE OF NON-FINANCIAL PERFORMANCE

	<i>Factor 1</i>	<i>Factor 2</i>
EMP5	0.741	0.225
EMP4	0.726	
EMP2	0.706	0.218
EMP6	0.625	0.422
EMP3	0.616	0.310
EMP9	0.599	0.271
EMP1	0.577	0.177
EMP8	0.520	
EMP7	0.469	0.441
EMP11		0.902
EMP12	0.206	0.705
EMP10	0.507	0.515

Factor 1: 1, 2, 3, 4, 5, 6, 8 and 9 – net fluctuation of employees, productivity of employees, trust in leadership, trust among employees, efficiency of work organisation, commitment of employees, work costs per employee, absenteeism and satisfaction with the situation within the company – EMP OBJECTIVE (‘hard’ measures)

Factor 2: 11 and 12 – learning ability and adaptability and risk-taking within the company – EMP SUBJECTIVE (‘soft’ measures)

Please note: after CFA, items EMP7 and EMP10 were omitted from further analysis.

CUSTOMER PERSPECTIVE OF NON-FINANCIAL PERFORMANCE

4 indicators, one factor (68.7% variance)